

SYNTAX

SERVING TIMEX-SINCLAIR
PERSONAL COMPUTERS

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MODEM CHANGE IMPROVES TEMP PERFORMANCE

SYNTAX had heard that 2050 MODEMS stopped at high temperatures, but the manufacturer says this problem no longer exists. Westridge, the maker, points out that the failures at 160 F ambient were above the rated range anyway. Nonetheless, a resistor change raised the temperature at which errors occur 40 F above the rated operating temperature. With this change, you can run at 110 F!

SMART TERM II PACKAGE IN TESTING

Those of you waiting for the advanced MODEM software should soon be able to get it for the 2050 MODEM. Westridge is testing the package now. Once testing is done, the manual can be written and you'll be on your way to full-function telecommunications.

AI APPLICATION TO BE IMPLEMENTED ON QL

Sinclair Research just announced a medical advisor package now being written for the QL. This package, based on a book approved by the AMA, will also undergo AMA review prior to release. Users will be quizzed on symptoms and advised to take appropriate actions.

NEW PRODUCTS IN DEVELOPMENT

SYNTAX will follow these development projects for you. SoftSync's 2068 version of Arctic's disassembler expected midsummer. Hawg Wild's FORTH and graphics packages for 2068. And an expander for 2068s, expected to provide RGB & RS-232 output, disc controller, & 64K of add-on memory. Plus a source of Chameleon ROMs.

SYNTAX SURVEY RETURNS FLOOD IN

Thanks for the help. Early readings say that SYNTAX needs ZX/TS applications & utilities, for which we need submissions. Details later

VENDOR REPORT

Starburst Software has a new name (Vessellware, 2214 Horine Rd., Festus, MO 63028) and sells 6 different 16K tapes. Send a 20 cent stamp to them for more info.

NEW PRODUCTS AND SERVICES

AFR Software announces ZX-CALC, an electronic spreadsheet with a 15 by 30 matrix (450 cell grid max.), 8 characters per cell (3360 chars. max.), all ZX/TS functions, cursor-oriented entry and deletion, cell data alignment, vertical windowing, absolute and relative replication, special sum function and autocalc feature. It can output to the TS2040 or ZX Printer, and sells for \$11.95 (tape with instructions), from AFR Software, 1605 Penna. Ave. #204, Miami Beach, FL 33139, 305/531-6464 (Req 32K, can use 64K)

Raedata, Inc. announces its new bi-monthly publication, Micro-ROOTS, at \$24.95 per year. The new Newsletter/Journal is for the microcomputer user (at any level, and any type of micro) who is also interested in his family roots and history (as well as the serious genealogist). The first issue will contain articles on getting started with your family roots, genealogical software reviews, user group activities, search for family roots, book reviews, archival research techniques, a query column, and a calendar or events.

RaeData also plans a computerized bulletin board system within three months, and an information forwarding service.

Contact RaeData, Inc., MicroROOTS, 14208 Weeping Willow Dr., Suite #32, Wheaton, MD 20906, 301/460-0754.

WHEN WRITING TO VENDORS...

Or when you call, mention SYNTAX. We can't grow without you.

SOFTWARE REVIEW

Program: Easy Math
Machines: ZX/TS
Form: Cassette
RAM Req: 16K
Listing: No
Listable: Yes
Language: BASIC
Display: Fair
Author: Simulusion
From: Simulusion
POB 2382
La Jolla, CA 92038
619/454-1023

Easy Math essentially turns your system into a calculator, with formulae storing ability and a 26 item user stack. It can calculate using all of the ZX/TS math functions, and can recalculate multiple times automatically.

It may not be so easy to figure Easy Math out. The commands make sense once you get the general idea behind the system, but you may get confused entering your formulae and data. Simulusion adds to the confusion by packing so much information on the screen (see sample). Then again, everything you need to see is on the screen all the time. You can have more than one application in memory at a time, but they do not interact.

If you need full math ability, Easy Math may be the easy way out.

```
A=0  COMPOUND INTEREST
B=1000  PRINCIPAL (Q)
D=10  INT.RATE/YEAR (U)
E=1  TIMES COMPOUNDED/YEAR
F=1  YEARS (X)
G=110  FUTURE VALUE (Y)
INDEX=1
STACK (I) =0
OPER = ( = )
LINE = (C)
M=1.1  1+(D/100)/E
N=0.11  (G/C)**(1/(E*F))
O=100  G*M**-(E*F)
U=-89  (N-1)*E*100
X=-23.158858  (LN (G/C)/LN M)/E
Y=1100  C*M** (E*F)
```

NIGEL SEARLE SHOWS QL AT BCS

Following a press dinner with reporters from Byte, Business Week, the Wall Street Journal and ESPN's Business Times as well as others, Nigel Searle demonstrated the QL's features and power to the General Meeting of the Boston Computer Society. The New England Life Hall was packed as Sinclair's new design demonstrated multitasking with four simultaneous displays of separate programs, generated a multicolor display & changed all the colors in one wipe with a BASIC command, and scrolled information between two boxed areas of the screen while the rest of the screen stayed unchanged.

Major QL technical specs were reported in SYNTAX (Jan.84 p.1) but some new info became available. A second processor, an 8049, runs the keyboard, sound, RS-232 receive, & realtime clock functions using an 11 MHz clock. Data from the micro-drive are available within 7 sec. Adding more than one accessory to the expansion buss will require an expander box, but the full 68008 buss is available at the deeply recessed card-edge connector. The expansion memory (0.5 Mbyte) plugs in here and appears to be supported to prevent wobbles. The built-in Local Area Network runs on 2 wires at 100 Kbaud speeds and can talk to Spectrum machines.

Bundled software includes a word processor that shows bold type with color, underlines on-screen, displays sub- & superscripts, and changes the margins in real time. Abacus, the spreadsheet, lets you refer to rows or columns by name--the name you assigned--such as AMEX or VISA. You can also name a row with a function--RATIO=VISA/CASH--and Abacus installs the formula in every column. Also, you can assign constants to rows or columns with a single command, row=0.33. And get 16-figure accuracy--ten trillion dollars to the penny. Archive lets you construct multi-file relational

databases using 84 commands. Easel rounds out the set with a graphics program to present data. This is also a what you see is what you get chart maker with labels--no charts in one file, labels in another here. All these programs contain the same expression evaluator for formulas, a decided advantage. And, all programs can export or import files to and from the others.

Shipments of QLs began in the UK in late May--1000 machines/week. Production at Thorn-EMI will build to 20,000 machines/month in summer and Sinclair will be bringing on another supplier late this year. According to Nigel Searle, plans are to ship 500,000 machines worldwide in 1984 and 1,000,000 machines in 1985. In June, Sinclair will start shipping to 30 countries. In July, the QL will go to the FCC for test and approval for US sales. Expect the machine here in the 4th quarter via mail order sales. Other sales channels may not be set up until the middle of 1985.

Third-party software will be slow in coming for the QL because it takes time to learn how to use its power. Nigel says US vendors are writing for this machine now.

CANTILEVER BEAM CALCULATION--8K/16K

This program calculates the deflection of a cantilevered beam loaded to maximum safe load at the free end. Do not use these results for construction or where their use could endanger anyone, unless you are competent to evaluate the results yourself. Many factors, such as moisture content, method of fixing the beam, wood quality, etc. affect the load and deflection of the beam. I've made limited tests on some beams and found the answers surprisingly accurate.

Enter the program, RUN, and answer the questions. Results are only significant to one decimal place. Wood is of the select, 15% moisture variety.

In building construction deflection usually doesn't exceed 1/360 of the length of the beam, so for most beams, the maximum safe load never gets tested. Considering that the formulae used here can have error up to 50% (for reasons previously mentioned), I'm glad!

R. A. Pick, Port Townsend, WA

```

10 PRINT "CALCULATES MAX SAFE
LOAD AND DEFLECTION FOR A BEA
M FIXED AT ONE END AND LOADED A
T THE OTHER"
15 PRINT
20 PRINT "ENTER LENGTH IN FEET
"
30 INPUT L
40 PRINT L;" FT"
45 PRINT
50 PRINT "ENTER WIDTH IN INCHE
"
60 INPUT W
70 PRINT W;" ""
75 PRINT
80 PRINT "ENTER DEPTH IN INCHE
"
90 INPUT D
100 PRINT D;" ""
105 PRINT
110 PRINT "SELECT WOOD"
112 PRINT "FIR=1", "HEMLOCK=2",
"REDWOOD=3"
120 INPUT M
130 PRINT M;" SELECTED"
135 PRINT
140 IF M<>1 THEN GOTO 190
145 LET DN=37.2
150 LET US=1200
160 LET HS=84
170 LET E=1.5E6
180 LET X=66.7
190 IF M<>2 THEN GOTO 240
195 LET DN=30.7
200 LET US=1024
210 LET HS=56
220 LET E=1.2E6
230 LET X=55.8
240 IF M>3 OR M<1 THEN GOTO 110
245 LET DN=28.3
250 LET US=1040
260 LET HS=60
270 LET E=1.4E6
280 LET X=55.8
300 LET WB=DN*(D/12)*(W/12)*L
310 LET LD=(W*D**2*X)/(4*L)
320 IF L<=D THEN LET LD=(W*D*HS
)/3
330 LET SL=LD-(WB/2)
340 LET DE=(4*SL*(L*12)**3)/(E*
W*D**3)
350 PRINT "SAFE LOAD= ";SL;" PO
UNDS"
355 PRINT "DEFLECTION= ";DE;" I
NCHE"
360 PRINT "ENTER ""CONTINUE"" F
OR MORE"
370 STOP
380 GOTO 20
SYNTACTIC SUM: 58696, 8K ROM

```

SOFTWARE REVIEW

Program: Music Library
Machines: ZX/TS
Form: Cassette
RAM Req: 16K
Listing: Yes
Listable: Yes
Language: BASIC
Display: Good
Author: Kendric C. Smith
From: Kendric C. Smith
927 Mears Court
Stanford, CA 94305
Price: \$14

Music Library provides database management program with a convenient format for organizing your music collection. It allows you to store three 32-character lines of information on 100 or more recordings of music. You decide how to use the three lines, such as name of artist on line 1, album name on line 2, and favorite selections on line 3. The program menus provide you with options to enter, correct, delete, save, display or print items on file.

Two special features set this program apart from others like it. You can alphabetize (and renumber) the records, and you can search for any word in any line.

Music library can be easily modified to adapt to your needs. This can allow you to change the trade-offs between user-friendly features, space available for data, and processing speed. The well written manual comes in a full-size format and gives numerous tips on modifying the program. I increased the number of albums from 100 to 175 by deleting the third line of each data record, redimensioning and putting all my data for each album on two lines.

Omnisearch, the routine to search for any word anywhere in the record, runs slow but works. I could speed it up by searching only the first line, but I like the way it works enough to tolerate the

delay. It's great to be able to not only ask for a list of all albums by a particular artist, but also to list the various artists who have recorded the same "classic".

As you make modifications to the BASIC program, a simple GOTO statement will tell you how much useable memory is available for data. The manual is so friendly and detailed that it becomes nearly a tutorial on programming in BASIC, with each routine explained along with suggestions for possible modifications.

I recommend Music Library for those of you, like me, who have so many record albums and tapes scattered about that you don't know what you have or where to find it. In fact, the program could be easily adapted to any type of collection, such as photographs or computer cassettes.

Dennis J. Parker, Sunnyvale, CA

SOFTWARE REVIEW

Program: VU-CALC
Machines: TS2068
Form: Cassette
RAM Req: 48K
Listing: No
Listable: Only BASIC part
Language: MC and BASIC
Display: Excellent
Author: Psion
From: Timex Computer Corp.
and other suppliers
Price: \$24.95

Only the name of this program resembles the ZX/TS VU-CALC. This version occupies 37K when resident without any data. Due to its design, large tables use very little additional memory.

Timex's manual for this spreadsheet program leaves much to be desired, but Psion wrote such a good program that you get comfortable very quickly. Formulae

can include simple arithmetic and sums, as well as constants and cell references.

You can enter text by typing a quote first, then the text and ENTER. Constants and formulae can be typed directly (followed by ENTER). Commands (accessed via the # key) include calculate, edit formula, format, load, save, print, repeat, blank, transfer, and quit.

Repeat allows replication of lines, titles, data, or formulae. Transfer moves sections around without changing them. Format allows you to specify integer, money, or general display format, right or left justified. Text mode allows 28 characters, some of which will spill over to adjacent cells.

If the program dumps you out to BASIC, you type GOTO 9000 and it shows the cell which generated the error. Hit ENTER and you can continue to work on the worksheet. Do not ignore this part of the directions: you may lose your data.

VU-CALC fixes column width at 7 characters, which can be a serious limitation if you deal with sums of money over \$9999.99. The ZX/TS version handled 8 characters, a slightly more realistic size.

VU-CALC contains a bug which makes formulae impossible to enter after exiting to the main menu and selecting option 2, clear entire worksheet. To correct this bug, follow these instructions.

LOAD the VU-CALC tape. Edit line 3200, inserting one CLEAR statement at the beginning of the line. SAVE "Vcalc" LINE 10 on a fresh tape. Now rewind the original tape, and LOAD "CODE". This will load in the title screen. Save this on the new tape after the VU-CALC BASIC section with SAVE "S"SCREEN\$. Finally, SAVE "V"CODE 29327,36000 to put the VU-CALC machine code on the tape. This tape will take longer to load than the original.

John Slattery, Chatham Twp, NJ

DEAR EDITOR:

Who knows how to bank switch the TS2068? Can I use my Memotech 64K RAM on it?

Ernest Clark, Louisville, TN

Timex's TS2068 Technical Manual (see review this issue) contains all you ever wanted to know about bank switching. Your Memotech RAM may be useful as a bank-switched memory, but would require substantial modifications to the address decoding hardware to work.

I am having no luck getting Firstloader [SYNTAX Dec'83] to work. I have rechecked the code and it is as listed. Use of my Winky Board doesn't help.

John Harkreader, Jacksonville, FL

Be sure to position the ZX/TS tape near the end of the 5 second quiet leader. If your tape is very noisy, it will not load. Try loading it on a ZX/TS machine and saving through the SAVE filter of the Winky Board. If this still doesn't work, suspect a bad Winky Board: try Firstloading without it. If the results are identical, you probably need a new Winky.

As an enthusiast of the ZX/TS, I am resubscribing to SYNTAX in full knowledge of Timex's recent decision to withdraw from the market. Furthermore, I plan to buy a TS2068 very shortly, despite the fact they may be in short supply.

Timex made mistakes in their marketing efforts, and they are paying the price. I am confident that Sinclair (or an enlightened US firm) will pick up and improve on Timex's efforts. Carry on.

Glenn McClung, Denver, CO

Sinclair Research in the US will not support Timex products and is concentrating on their new QL.

Where can I get a listing of the ROM in the TS2068?

Gerald McKouen, Lansing, MI

Once again, the TS2068 Technical Manual contains ROM entry points and other technical information, however, no listing of the ROM. The Spectrum ROM listing is available from Melbourne House in the UK, but no equivalent book can be purchased in the US.

I am in complete agreement with Thomas Woods of Jefferson, NH, but I think all serious ZXers should take full advantage of the fine bargains offered by these panic stricken vendors. I am trying to do so, and I realize I may run afould of a vendor who is a ripoff artist.

So far I have gotten my Zebra Light pen (14 days from mailing my order in). I still have orders for a K2 Kradle Keyboard and 64K RAM, a computer control center from MBR Distributors of Deerfield, IL, and an EPROM chip for my Hunter Board from ROMPAK of Los Angeles (two weeks and still waiting... and they're practically across town).

ZX81s are actually very small, very inexpensive computers that can do most anything you ask of it, slowly. It is a lousy game player because it is slow and has very crude graphics. But it's so cheap that it can be entirely dedicated to one task (I have a system devoted to rental management and accounting for a 27 unit apartment complex). There are thousands of applications that now attract thousand dollar systems that can be operated for under \$400. I am always willing to talk business with the ZX/TS. It has remarkable data storage capacity within strings. With fast LOAD utilities it even stores and loads reasonably quickly on cassette.

Terry Hardenbergh, Pasadena, CA

BOOK REVIEW

Title: TS2068 Personal Color
Computer Technical
Reference Manual
Authors: Corcoran and Branigin
Pages: Approx. 350 Looseleaf
Machines: TS2068
From: Timex Materials Sales
Division
POB 1378
Little Rock, AR 72203
Price: \$25 ppd

We've already told you that everyone who owns a TS2068 should buy this book [SYNTAX May'84]. Even if you never need this book, it will increase the resale value of your 2068 because it describes the entire system in intimate technical detail.

If you don't program in machine code or understand digital electronics, this book probably won't be to useful to you. It assumes a great deal of prior knowledge about computers and electronics.

But if you need to know about how the CPU, ROM, RAM, sound chip, joysticks, keyboard, display hardware, cassette ports, or any other facet of the hardware works, or you need pinouts for any of the connectors inside or outside, or you need to understand how the ROM cartridge software gets loaded, or how the operating system calls work, or how the machine interfaces to available Timex hardware, you will want a copy of this book. It also contains sections on known bugs in the TS2068 ROM (some of them rather obscure) and listings of machine code packages for doing 80, 64, and 40 column displays, and movable graphic blocks (sprites). It even includes a PCB layout (including solder mask) for an EPROM board for the dock connector.

If you're serious about your 2068, or just to increase resale value, this book is well worth the price. It tells it all.

SOFTWARE REVIEW

Program: TSTIS Products Catalog
Machines: TS2068
Form: Cassette
RAM Req: 48K
Listing: No
Listable: Yes
Language: BASIC
Display: Good
Author: Don Barnard
From: Timex/Sinclair Training
Information Service
POB 15214
Red Bank, TN 37415
615/877-6328
Mon-Fri 1-6pm EST
Price: \$3 ppd

Finally, a computer program that doesn't even need to be a computer program! TSTIS sells this cassette not as a program so much as a catalog: each biweekly update lists over 180 different books, software, and hardware packages from major TS2068 suppliers.

You can order half of what's listed directly from TSTIS, with a 5% discount if you order more than 2 items and a 10% discount if over 4 items. TSTIS adds a shipping charge of \$1.50 + .25/item, and accepts only money orders (no checks). TN residents must add 7.25% taxes. If you want an update of the catalog, you return your cassette (or another blank 10 minute tape) with your order.

Advertising in the TSTIS products catalog is free. One side of the tape lists TSTIS products and the other side lists other products, including information for ordering directly from suppliers. TSTIS limits listings to 10 lines of 32 characters.

You can subscribe to the TSTIS products catalog for 6 months for \$12 (12 bimonthly updates). You must return the old tape to receive the latest update. Single updates cost \$1 with cassette. TSTIS asks that you order a copy at \$3 to look it over before subscribing.

COLOR PLOT--TS2068

Use this program for drawing lines or circles anywhere on the screen. If you use a joystick, you can move, change color, and draw circles all at once. If you use your keyboard, you can only enter one command at a time. RUN the program and push k for help.

Joseph D. Reigada, Modena, NY

```

1 REM color plot
2 REM © Joseph D Reigada 1984
3 REM R.D.#1 Hwy, Box 141
4 REM Rts. 44 & 55
5 REM Modena, NY 12548
7 CLS
8 LET b=5: LET c=0: LET i=0:
LET p=9: LET x=127: LET y=87
9 GO SUB 100
10 IF STICK (1,2)=1 OR INKEY#="q" THEN LET y=y+1
12 IF STICK (1,2)=2 OR INKEY#="z" THEN LET y=y-1
14 IF STICK (1,2)=8 OR INKEY#="p" THEN LET x=x+1
16 IF STICK (1,2)=4 OR INKEY#="i" THEN LET x=x-1
18 IF STICK (1,2)=9 OR INKEY#="o" THEN LET y=y+1: IF STICK (1,2)=9 OR INKEY#="o" THEN LET x=x+1
20 IF STICK (1,2)=10 OR INKEY#="a" THEN LET x=x+1: IF STICK (1,2)=10 OR INKEY#="a" THEN LET y=y-1
22 IF STICK (1,2)=6 OR INKEY#="u" THEN LET y=y-1: IF STICK (1,2)=6 OR INKEY#="u" THEN LET x=x-1
24 IF STICK (1,2)=5 OR INKEY#="1" THEN LET x=x-1: IF STICK (1,2)=5 OR INKEY#="1" THEN LET y=y+1
26 IF INKEY#="8" THEN LET c=c-1: IF c<=1 THEN LET c=1
28 IF INKEY#="7" THEN LET c=c+1: IF c>=80 THEN LET c=80
30 IF INKEY#="8" OR INKEY#="7" THEN BEEP .125,(c-35)
32 IF STICK (2,2)=1 OR INKEY#="x" THEN GO SUB 100
34 IF INKEY#="b" THEN GO SUB 1
50
36 IF INKEY#="e" THEN GO TO 96
38 IF INKEY#="h" THEN CIRCLE X,y,c: BEEP .125,-23
40 IF INKEY#="k" THEN GO SUB 7
0
42 IF INKEY#="s" THEN GO SUB 2
00
44 IF INKEY#="v" THEN GO TO 7
46 IF INKEY#="c" THEN GO SUB 3
00
48 IF y>=168 THEN LET y=168
50 IF y<=0 THEN LET y=0
52 IF x>=255 THEN LET x=255
54 IF x<=0 THEN LET x=0
56 IF STICK (1,2)=0 THEN GO TO 60
60

```

```

58 BEEP .0007,49
60 BORDER b: PAPER p: INK i
62 IF i=8 THEN GO TO 10
64 PLOT x,y: IF INKEY#="w" THEN
N DRAW x,y
66 IF INKEY#="w" THEN BEEP .125,-47
68 ON ERR GO TO 10
68 GO TO 10
69 STOP
70 PRINT AT 2,0:"Commands for color plot.": PRINT "COPY THEM DOWN!": PRINT
72 PRINT "b= BORDER COLOR", "- Direction Keys"
74 PRINT "c= COPY": PRINT "E= EXIT", " "
76 PRINT "h= CIRCLE ", " "
90
78 PRINT "s= SAVE", " "
80 PRINT "v= CLEAR SCREEN", " "
82 PRINT "w= DRAW", " "
: OVER 1: PRINT "v": AT 11,24:"i"
: OVER 0: PRINT " "
84 PRINT "x= INK COLOR": PRINT " (ink button on joystick)"
86 PRINT "6= CIRCLE DECREASE": PRINT "7= CIRCLE INCREASE"
88 PRINT "Color 8= NO PLOT": PRINT : PRINT "All commands but e xit use lower case.": PRINT : PRINT ">*USE RIGHT HAND JOYSTICK PORT*"
89 BEEP .125,13
90 RETURN
95 STOP
96 ON ERR RESET
97 BEEP .5,-23: BEEP .5,-35
99 STOP
100 LET i=i+1: IF i=10 THEN LET i=0
110 PRINT AT 0,0:"Ink Color.": i: "-Press k for commands": BEEP .125,49
120 PAPER 9: INK i
130 RETURN
149 STOP
150 LET b=b+1
160 IF b>=8 THEN LET b=0
170 BEEP .125,25
180 BORDER b
190 RETURN
199 STOP
200 FLASH 1: IF INKEY#="s" THEN PRINT AT 0,12:" Enter name": FLASH 0
205 DIM s$(10)
210 INPUT s#
220 IF s#="" THEN GO TO 210
230 PRINT AT 0,12:" Name: ";s#," "
240 SAVE s#SCREEN#
250 GO TO 110
299 STOP
300 FLASH 1: PRINT AT 0,12:" Copying "
310 PAUSE 50
320 COPY
330 FLASH 0: PRINT AT 0,12:" Copy complete "
340 PAUSE 50
350 GO TO 110
399 STOP
SYNTACTIC SUM: 17029, TS2068

```

HARDWARE REVIEW

Product: Centronics Printer I/F
Machines: TS2068
Price: \$69.95
From: AERCO
POB 18093
Austin, TX 78760
512/331-0719

This interface plugs into the back of the TS2068 and provides a cable with a standard Centronics parallel printer connector. Coupled with driver software, it enables the TS2068 commands LPRINT and LLIST to output directly to a parallel printer, and provides the same function as COPY (but not via the COPY command).

AERCO's board comes uncased and without an extender for the TS2068 bus (in fact, the connector on the board only mates with the ZX/TS compatible pins). Therefore, this interface must be the last plug-in on the bus.

You must LOAD a cassette containing the print driver program before using the interface. This program will patch into LPRINT and LLIST, but you must change all occurrences of COPY in your programs to LPRINT CHR\$ 1. Changing MC programs to COPY through this interface presents even more of a problem: you must replace the COPY calls in the MC to jump instead to AERCO's routine. For programs with little modification documentation, this can be almost impossible.

Deciding to use CHR\$ 1 as the code for copy screen in the printer driver was unfortunate; LLIST output occasionally contains this code. When it does, a copy of the screen will be inserted in your listing. To avoid this problem (which AERCO calls a bug in the TS2068), follow the instructions to disable the CHR\$ 1 function and call the AERCO COPY routine via RAND USR 64628.

AERCO provides a number of important and often overlooked

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SMART MODEM \$119.95

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See Review in Feb. '84 SYNTAX • 2 FREE Hours on COMPUSERVE
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features, however. You may tell the printer driver program to expand TS2068 tokens out to their word equivalents (for LLIST), or tell it to send all codes unaltered (for direct printer control). You can customize the COPY routine for four different types of bitmap printer code systems (covering Gorrilla Banana, Seikosha GP100, Prowriter 8510, Star Gemini 10X, All Epson models, and Mannesmann Tally Spirit 80). Other options include automatic linefeed after carriage return, use TS2040 printer, and settable printer width. You can add AERCO's printer driver to your own programs using instructions included with it.

Most of the drawbacks of this interface are minor. It works well and shows enough forethought to make you believe that the features they left out were left out for a reason (like price/performance), not because they never thought to include them.

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